



California Energy Commission Collaborative State Transmission Assessment Workshop

Juan C. Sandoval
Imperial Irrigation District
System Planning and Engineering
May 10, 2004



Existing Geothermal Resources in IID's Control Area

- IID's 230 kV Collector System envisioned to accommodate existing and future geothermal resources
- 510 MW of geothermal generation currently wheeled through 230 kV radial collector system and IID grid
 - 340 MW located at the Salton Sea Geothermal fields
 - 90 MW located at the East Mesa area
 - 80 MW located at the Heber, CA area



Figure: Near-Term Transmission Options – not for distribution



Physical Transmission Constraints

- Path 42 (IID-SCE) 600 MW rating fully subscribed (South to North)
- Existing Transmission Congestion at Imperial Valley and Blythe substations would prevent additional geothermal resources delivery to any of these two control area inter-ties



Preferred Interconnection(s)

- To IID's 230 kV Collector System at Midway substation
- With Path 42 upgrade (Coachella Valley – Mirage/Devers), this interconnection will support up to 600 MW (Phase I) of new geothermal generation resources
- It can be staged to accommodate a phase development
- Additional geothermal exports to Mirage / Devers could affect SCE's operations



Foreseeable Future Transmission Line Needs to Accommodate Phase I (600 MW)

- 230 kV Coachella Valley-Mirage/Devers transmission lines need to be upgraded to two conductors per phase
- Interconnect Coachella Valley Switching Station to 500 kV transmission system east of Devers
- Upgrade IID's existing 161, and 230 kV transmission lines to higher voltage
- El Centro Switching Station – Highline 230 kV interconnection



Interconnection Alternative for Phase II (over 600 MW of New Geothermal Resources)

- Proposed 500 kV line from IV to SDGE can be looped into IID's switching station to be located nearby Salton Sea area (Bannister)
- New 500 kV line from Midway or Bannister to Coachella Valley/Devers switching stations



Figure: Required Transmission Corridors – not for distribution



Conclusions

- System analysis (power flows and Stability) needs to be done to identify local and regional system impacts and most effective transmission system upgrades
- IID's long term transmission expansion plans could incorporate geothermal additions/exports needs (via OATT requests)
- Support is required to facilitate transmission enhancements (i.e. environmental, land use, archeological, BLM, tribal land, etc.)